

**Minutes**  
**Control Protocols Working Group**  
Sunday, 19 January 2014  
D/FW Marriot Solana  
Westlake, TX

**Presiding chairperson:** Kimberly Corbett Oates; Schuler Shook; P; DE

**Recording secretaries:** Karl Ruling and Erin Grabe; PLASA North America

**Members attending:**

Kevin Loewen; Pathway Connectivity Inc.; Acuity Brands Inc.; P; MP  
Philip Nye; Acuity Brands Lighting; Acuity Brands Inc.; A; MP  
Oliver Waits; Avolites Ltd.; O; MP  
Bill Ellis; Candela Controls, Inc.; O; U  
Jason Potterf; Cisco; P; MP  
Paul Kleissler; City Theatrical, Inc.; P; MP  
Edward A. (Ted) Paget; Daktronics Automated Rigging Solutions; Daktronics Inc. ; P; G  
Larry Schoeneman; DesignLab Chicago, Inc.; P; DR  
Milton Davis; Doug Fleenor Design, Inc.; A; MP  
Daniel W. Antonuk; Electronic Theatre Controls, Inc.; P; MP  
Maya Nigrosh; Electronic Theatre Controls, Inc.; A; MP  
Sang-Kyu Lim; ETRI; Electronics and Telecommunications Research Institute; P; G  
Scott M. Blair; Full Throttle Films/ VER; P; DR  
Robert Goddard; Goddard Design Co.; P; MP  
Ed Garstkiewicz; Harting Inc., North America; Harting KGAA; P; G  
Peter Willis; Howard Eaton Lighting Ltd.; P; CP  
Edwin S. Kramer; I.A.T.S.E. Local 1; P; U  
Roger Lattin; I.A.T.S.E. Local 728; P; U  
Hamish Dumbreck; JESE Ltd.; James Embedded Systems Engineering; O; MP  
Ken Vannice; Ken Vannice LLC; I; G  
Sang-Il Choi; Kyungpook National University; O; G  
Tyrone Mellon\_Jr.; Lex Products Corp.; P; CP  
Peter Kirkup; LumenRadio AB; A; MP  
Simon Newton; Open Lighting Project; P; G  
Charles Reese; Production Resource Group; P; DR  
Michael Lay; Philips Color Kinetics; Royal Philips; P; MP  
Mitch Hefter; USITT; P; U

**Visitors:**

Richard Cadena; PLASA  
Claude Ostyn; Full Throttle Films/VER

**1 Opening remarks**

Kimberly Corbett Oates called the meeting to order at 9:04 with a blow on a train whistle. She welcomed everyone to bucolic Westlake, TX.

**2 Attendance**

**2.1 Introductions of those present and circulation of attendance sheet**

A hot salmon sign-in sheet was passed counter-clockwise while self-introductions took place clockwise.

**2.2 Determination of a quorum**

By a show of raised hands, a supermajority was counted and announced by Kimberly Corbett Oates.

## 2.3 Recognition of alternate voting members

### 3 Membership

#### 3.1 Requirements for membership

*The following statement was read aloud to the assembly by Kimberly Corbett Oates:*

Membership is open to all who are affected by the work of the group. People and companies that would be in any interest category other than a manufacturer interest category are, at this time, particularly encouraged to apply for membership. Voting members are required to attend meetings and to vote on letter ballots. Voting members and their alternates may not miss three consecutive meetings without a loss of voting status.

#### 3.2 Changes to observer status due to lack of attendance

The following voting members have missed the previous two meetings. In accordance with the Policies and Procedures, they will be moved to observer status by the working group if this meeting is also missed.:

Gordan Rancic; Phoenix Service srl; P; MP  
Jeff T. Miller; Walt Disney Company; P; U  
Christopher Tilton; Westlake Reed Leskosky; P; DE

These voters were moved to observer status. Voting status may be requested at the next meeting attended.

#### 3.3 Processing of new membership requests

As of 2 January 2014, the following applications have been received and logged:

Justyn Butler; JBOTS; O; CP  
Paul K. Ericson; Sparling; O; DE  
Sang-Il Choi; Kyungpook National University; O; G

Eddie Kramer moved to approve the applications. Ted Paget seconded the motion, which passed by a unanimous show of hands.

Jason Potterf (Cisco) asked for a change of status to Principal from Observer.

Mitch Hefter moved to approve the change of status. The motion was seconded and passed by a show of hands.

#### 3.4 Consensus body

The consensus body of CPWG, at the time of this meeting, including those not present, was:

Name	Parent Company	Voting Status	Interest Category
Kevin Loewen	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Inc.	A	MP
Gary Douglas	Acuity Brands Inc.	A	MP
Philip Nye	Acuity Brands Inc.	A	MP
Garrett Gallant	Acuity Brands Inc.	A	MP
Jason Potterf	Cisco	P	MP
Paul Kleissler	City Theatrical, Inc.	P	MP
Edward A. (Ted) Paget	Daktronics Inc.	P	G
Larry Schoeneman	DesignLab Chicago, Inc.	P	DR
Ulrich Kunkel	DIN, NVBF Committee	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	A	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	P	MP

Name	Parent Company	Voting Status	Interest Category
Steve Terry	Electronic Theatre Controls, Inc.	A	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	A	MP
Sang-Kyu Lim	Electronics and Telecommunications Research Institute	P	G
Scott M. Blair	Full Throttle Films/ VER	P	DR
Jeremy Hochman	Full Throttle Films/ VER	A	DR
Robert Goddard	Goddard Design Co.	P	MP
Ed Garstkiewicz	Harting KGAA	P	G
Howard Forryan	Harting KGAA	A	G
Peter Willis	Howard Eaton Lighting Ltd.	P	CP
Edwin S. Kramer	I.A.T.S.E. Local 1	P	U
John Huntington	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	I.A.T.S.E. Local 728	A	U
Ken Vannice	Ken Vannice LLC	I	G
Tyrone Mellon_Jr.	Lex Products Corp.	P	CP
Joshua Liposky	Lex Products Corp.	A	CP
Michael Karlsson	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	A	MP
Peter Kirkup	LumenRadio AB	A	MP
Simon Newton	Open Lighting Project	P	G
Charles Reese	Production Resource Group	P	DR
Michael Lay	Royal Philips	P	MP
Kimberly Corbett Oates	Schuler Shook	P	DE
Eckart Steffens	Soundlight, the DMX Company	P	CP
Mitch Hefter	USITT	P	U

Votes by Interest Category	Total
<b>CP</b> (Custom-market Producer)	<b>3</b>
<b>DE</b> (Designer)	<b>1</b>
<b>DR</b> (Dealer or Rental company)	<b>3</b>
<b>G</b> (General interest)	<b>5</b>
<b>MP</b> (Mass-market Producer)	<b>9</b>
<b>U</b> (User)	<b>3</b>
<b>Total votes possible</b>	<b>24</b>

#### **4 Approval of the minutes from the November meeting**

See *Cpmin11-2013.pdf*. Edits made to item 10.5.

Peter Willis requested to strike the last sentence of item 8.9.

Ted Paget moved to approve the November minutes, as amended. The motion was seconded and approved by a show of hands.

#### **5 Reading of the call for patents**

*The following statement was read aloud to the assembly by Kimberly Corbett Oates:*

PLASA intends not to publish any standard that contains protected intellectual property, unless that information can be licensed by anyone for a reasonable fee. PLASA uses a process of open patent and copyright disclosures to implement its intent. PLASA does not conduct patent or copyright searches and does not warrant that its standards contain no protected intellectual property.

In keeping with the open disclosures policy, I ask if anyone present wishes to notify this working group of the existence of a patent or copyright or other intellectual property that might protect material in a standard being developed by this working group. You need not be the holder of the patent or copyright to notify this working group of its existence.

Nothing was reported.

#### **6 Reading of the anti-trust statement**

*The following statement was read aloud to the assembly by Kimberly Corbett Oates:*

The PLASA Board of Directors, the Technical Standards Council, and the leadership of this working group will reject or nullify any actions that unlawfully restrain trade. Anyone who feels that such an action is being or has been taken is requested to bring that matter to the attention of the chairs immediately. Anyone who feels that actions in restraint of trade have been taken and not properly annulled is requested to notify the TSC chair or PLASA chair immediately.

PLASA legal counsel has informed us that violations of the anti-trust laws can have serious consequences. Individuals engaged in certain unlawful conduct can be found criminally liable. An individual convicted of a criminal violation of the Sherman Act may be fined as much as \$1,000,000 and imprisoned for up to ten years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager.

Nothing was reported.

#### **7 Approval of agenda**

Scott Blair wanted to talk about a new Ethercon connector on the market. Item listed under Other business.

Item 8.9 (Plugfest in conjunction with Prolight + Sound) was struck from the agenda with nothing further to be added at this time. Item 10.2 was added for the Above and Beyond Awards.

Scott Blair moved to approve the amended agenda. The motion was seconded and passed by a show of hands.

#### **8 Old business**

##### **8.1 Standards Maintenance**

*Any news or action needed on any of the following standards? This is a placeholder in the agenda, so we don't forget to maintain them. Items marked with an asterisk (\*) have a public review end date of 4 February 2014.*

ANSI E1.3 – 2001 (R2011), Entertainment Technology - Lighting Control Systems - 0 to 10V Analog Control Specification & Application Guide For ANSI E1.3 – 2004 Lighting Control Systems 0 to 10V Analog Control Specifications. (Revision, reaffirmation or withdrawal by 2016)

ANSI E1.11 – 2008 (R2013), Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories. (Revision, reaffirmation, or withdrawal by 2018)

ANSI E1.17 - 2010, Architecture for Control Networks. (Revision, reaffirmation or withdrawal by 2016)

ANSI E1.20 - 2010, Remote Device Management over USITT DMX512. (Revision, reaffirmation or withdrawal by 2016)

ANSI E1.27-1 – 2006 (R2011), Entertainment Technology - Standard for Portable Control Cables for Use with USITT DMX512/1990 and E1.11 (DMX512-A) Products. (Revision, reaffirmation or withdrawal by 2016)

ANSI E1.27-2 – 2009, Entertainment Technology - Recommended Practice for Permanently Installed Control Cables for Use with ANSI E1.11 (DMX512-A) and USITT DMX512/1990 Products. (Revision, reaffirmation, or withdrawal by 2014)\*

ANSI E1.30-1 - 2010, EPI 23, Device Identification Subdevice. (Revision, reaffirmation or withdrawal by 2016)

ANSI E1.30-3 – 2009, EPI 25, Time Reference in ACN Systems Using SNTP and NTP. (Revision, reaffirmation, or withdrawal by 2014)\*

ANSI E1.30-4 – 2010, EPI 26, Device Description Language (DDL) Extensions for DMX512 and E1.31 Devices. (Revision, reaffirmation, or withdrawal by 2015)

ANSI E1.30-7 – 2009, EPI 29, Allocation of Internet Protocol Version 4 Addresses to ACN Hosts. (Revision, reaffirmation, or withdrawal by 2014)\*

ANSI E1.30-10 – 2009, EPI 32, Identification of Draft Device Description Language Modules. (Revision, reaffirmation, or withdrawal by 2014)\*

ANSI E1.37-1 - 2012, Additional Message Sets for ANSI E1.20, Remote Device Management. (Revision, reaffirmation, or withdrawal by 2017)

ANSI E1.45-2013, Unidirectional Transport of IEEE 802 data frames over ANSI E1.11 (DMX512-A) (Revision, reaffirmation, or withdrawal by 2018)

Kimberly Corbett Oates reminded the group of the items in public review, marked above with an asterisk.

## **8.2 ANSI E1.17 - 2010, Architecture for Control Networks**

*The draft was submitted for a public review beginning on 17 January 2014 and ending on 3 March 2014.*

Karl Ruling read Nick Wagner's comment. The group discussed how this comment may change how another EPI can be handled. A comment summary will be available when the public review ends.

## **8.3 BSR E1.31 with Universe Synchronization**

*See E1-31\_Update\_2013\_r5\_mn.pdf. Maya Nigrosh reported. More changes from the task group. Want to do another version to consider at USITT for public review.*

Maya Nigrosh reported to the group. She received a proposal to amend the standard to support universe recognition. She agreed to continue work on the document between this meeting and the next, with the intent of submission for public review in March.

## **8.4 BSR E1.33, Transport of ANSI E1.20 (RDM) in an E1.31 environment**

*From the draft November minutes:*

*Scott Blair issued a call for more help on researching discovery and more timely review of the draft documents that are sent out to the task group.*

*It was noted by Michael Lay that the E1.33 RDM task group had the tacit approval of the working group to proceed with an alternative to SLP, and that further testing and evaluation of Bonjour should proceed.*

Scott Blair reported that the task group is working on changes. Looking at MDNS and DNS-SD because it scales to larger networks and more devices, without needing a server. Jason Potterf and Simon Newton are working on this document and hope to have a clean version for March with the intent on voting for public review in July.

#### **8.4.1 New EPI: an E1.30-11, possibly**

Scott Blair announced that another EPI has arisen out of the work of E1.33. The was discussion of the process and Simon Newton is to report back to the TSP with a name and proposal.

#### **8.5 BSR E1.37-2, Additional Message Sets for ANSI E1.20 (RDM) – Part 2, IPv4 & DNS Configuration Messages**

*From the draft November minutes:*

*No comments came back during the public review. Simon Newton recommended that some things be changed, including: rename a PID; change the interface index to 32 bit; put in a disclaimer that the actual codes will be assigned later. This will be done by the January meeting, with the hope of sending the draft out for another public review.*

Simon Newton reported that the document was not ready for this meeting, but that there should be a document for this group to consider in March.

#### **8.6 BSR E1.37-x, Additional Message Sets for ANSI E1.20, LED walls and video displays**

*From the draft November minutes:*

*No progress on BSR E1.37 due to effort being focused on BSR E1.33, reported Scott Blair.*

There is no new progress, reported Scott Blair, but it is on the to-do list after more pressing work is completed.

#### **8.7 European Plugfest**

Peter Willis reported that the Plugfest and Developers Conference will be held at Gatwick Manor between 24-26 April. He noted the support of Peter Kirkup, Hamish Dumbreck, Ron Bonner, and Simon Hobday. Peter Willis urged the group for their RSVPs to confirm space and buffet needs, noting that the event is not free, but the price is reasonable. The fee covers the venue costs and food, which Bob Goddard said is very good. The registration site will go live soon.

#### **8.8 Texas Plugfest**

The Texas Plugfest is running 17, 18, 19, and 20 January 2014.

Scott said that this plugfest is "going gang-busters." Had to call for another table. He noted the participation of LumenPulse, AJ Benjamin Electric (RDM-controlled breakers), and Avolites.

Peter Willis noted that five Europeans had come, but noted that it is more expensive to travel in the summer, so will likely be fewer European participants at the summer plugfest.

[The group took a 10 minute break at 9:50.]

### **9 New business**

#### **9.1 Proposal to support E1.45 devices with E1.20 RDM protocol**

*See Proposal to support E1\_45 devices with E1\_20 RDM protocol.pdf. Sang-Kyu Lim*

See revised proposal *Revision\_Proposal to support E1\_45 devices with E1\_20 RDM protocol.pdf*. Sang Kyu Lim presented his proposal.

Ted Paget moved to approve that this group take up the new project. There was some discussion on this project being included in the E1.37 suite. The motion was seconded. The motion passes with 15 in favor, 3 opposed, and one abstention. This was a supermajority vote in favor.

Kimberly Corbett Oates requested a task group meeting in Ft. Worth in March, and noted the interest of Scott Blair, Sang-Kyu Lim, Philip Nye, Maya Nigrosh, Kevin Loewen, and Bob Goddard to being a part of the task group. Possible designation of BSR E1.37-3.

## **9.2 RDM updates**

*From the November draft minutes:*

*Peter Willis said that he will put something forward at the January meeting for doing firmware updates via RDM. He requested that people communicate with him before January if they have interest in the project.*

Peter Willis noted that he did not circulate a document. He said that while it is a work in progress, it is in progress. Peter Willis motioned that a task group be formed to draft a document. He wants to limit the project simply to doing firmware update and estimates that two PIDs are needed.

The motion was seconded and approved by a show of hands with 19 in favor and 1 abstention, which was a supermajority voting in favor. The task group is appointed as Scott Blair, Kevin Loewen, Paul Kleissler, Hamish Dumbreck, Milton Davis, Peter Kirkup; Oliver Waits, Simon Newton, Jason Potterf, and Peter Willis as the chair. Karl Ruling announced the possible designation for this project as BSR E1.37-4, Firmware updates via ANSI E1.20, RDM.

Kimberly Corbett spoke on the need to finish projects before we take on new ones. Peter Willis spoke on the need for the group to focus on keeping projects small and specific.

## **9.3 More new business**

### **9.3.1 More PIDs**

Peter Willis describe a need for an addition of three to four PIDS. These and some other ones that Scott Blair has "in the bucket" could be part of a new standard, Karl Ruling suggested could be BSR E1.37-5, General Purpose Messages for ANSI E1.20 RDM (PID extensions).

#### **9.3.1.1 Luminaire group declaration and categorization**

Information about the location or grouping of luminaires/devices would be useful to have live in the devices. It would enable a light to be tagged as being on a particular position or for a particular purpose and then the controller can query the devices and discover this, which would be helpful for grouping them for control.

#### **9.3.1.2 Luminaire group declaration and categorization**

Peter Willis said that an additional PID to declare and identify the personalities of luminaires is needed.

#### **9.3.1.3 Consolidate sensor data gathering**

Peter Willis noted that an additional PID for gathering consolidated sensor data is needed. He noted that even in small rigs, and certainly in large rigs, polling sensor data is time intensive, because each parameter has to be queried individually. The new PID would get all of the sensors data from a luminaire, consolidated. Either all the data, or all the current data with no history.

#### **9.3.1.4 Motion to start project**

Scott Blair moved that the group approve work on this document, BSR E1.37-5, General Purpose Messages for ANSI E1.20 RDM (PID extensions). The motion was seconded and passed with a unanimous show of hands, a supermajority.

Peter Willis, Peter Kirkup, Oliver Waits, Kevin Loewen, Bob Goddard, Scott Blair were appointed to this task group, with Simon Newton as the chair.

### **9.3.2 More more new business: Reserved IDs for product development**

Peter Willis moved that Manufacturer ID hex values 7FF0 through 7FFF be reserved for development, prototyping, and test use. It was discussed that E1.11 language will be used. The motion was seconded and unanimously approved by a show of hands. Karl Ruling said he'd reserve the IDs today.

## **10 Other business & announcements**

### **10.1 Connector news**

Scott Blair reported that a new connector from Amphenol exists that is Neutrik Ethercon compatible. It has a real CAT 5e rating and includes LEDs for signal indication. It works well with the Neutrik Ethercon connectors, he said. The connector was passed around the room.

### **10.2 Above & Beyond Awards**

Michael Lay reported on the first CPWG recipients of the Above and Beyond volunteer recognition awards, Simon Newton and Bill Ellis. This is the first year for this award, which recognizes exemplary work by a TSP volunteer. Recipients are nominated by their peers, and submission for recipients may be made at any time at [tsp.plasa.org/AboveandBeyond](http://tsp.plasa.org/AboveandBeyond). This year's recipients both received an enthusiastic round of applause and a certificate.

### **10.3 RDM news**

Bill Ellis reported that RDM is used by Oase to control water fountains.

## **11 Next meeting**

The next meeting is scheduled for 27 March, between 9:00 a.m. and 1:00 p.m. at the Fort Worth Convention Center in Ft. Worth, TX. The current schedule is always available at <http://na.plasa.org/news/meetings.php>.

## **12 Adjournment**

Ted Paget moved to adjourn the meeting. The motion was seconded and approved by a show of hands. Kimberly Corbett Oates declared the meeting adjourned at 11:38 a.m.



Name	Company	Representing	Voting Status	Int. Cat.
Tracy Underhill	4U Consulting	4U Consulting	O	G
Jean-Francois Canuel	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	O	CP
Reza Khanmalek	Spectrum Manufacturing Inc.	A.C. Lighting Ltd.	O	CP
Kevin Loewen	Pathway Connectivity Inc.	Acuity Brands Inc.	P	MP
Robert Bell	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Gary Douglas	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Philip Nye	Acuity Brands Lighting	Acuity Brands Inc.	A	MP
Garrett Gallant	Pathway Connectivity Inc.	Acuity Brands Inc.	A	MP
John Sellers	AIM Northwest	AIM Northwest	O	G
André Broucke	André Broucke	André Broucke	O	G
Jon Lenard	Applied Electronics	Applied Electronics	O	MP
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	O	U
Wayne David Howell	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	O	DE
Fraser Connolly	Artistic Licence Engineering Ltd.	Artistic Licence Holdings	O	DE
Steve Friedlander	Auerbach Pollock Friedlander	Auerbach Pollock Friedlander	O	U
J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	MP
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	MP
Oliver Waits	Avolites Ltd.	Avolites Ltd.	O	MP
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	O	DR
Tom Grimes	High End Systems, Inc.	Barco	O	MP
Jiantong Wu	Beijing Special Engineering Design & Research Institute	Beijing Special Engineering Design & Research Institute	O	G
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	MP
Lee J. Bloch	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G

Name	Company	Representing	Voting Status	Int. Cat.
Soo-Myong Chung	Bloch Design Group, Inc.	Bloch Design Group, Inc.	O	G
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Will Wagner	Carallon Ltd.	Carallon Ltd.	O	MP
Steve Roberts	Carr & Angier	Carr & Angier	O	G
Gilray Densham	CAST Software	CAST Group Inc	O	MP
Bob Toms	Catalyst Microsystems LLC	Catalyst Microsystems LLC	O	G
Jason Potterf	Cisco	Cisco	P	MP
Chuck Seifried	Phoenix Civic Plaza	City of Phoenix	O	U
Paul Kleissler	City Theatrical, Inc.	City Theatrical, Inc.	P	MP
Carlo Venturati	Clay Paky S.P.A.	Clay Paky S.P.A.	O	MP
Yehuda Shukram	Compulite Systems	Compulite Systems	O	MP
Dietmar Rottinghaus	Connex GmbH	Connex GmbH	O	MP
Paul Kenneth McEwan	Zero 88	Cooper Controls Ltd.	O	MP
Edward A. (Ted) Paget	Daktronics Automated Rigging Solutions	Daktronics Inc.	P	G
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	G
Larry Schoeneman	DesignLab Chicago, Inc.	DesignLab Chicago, Inc.	P	DR
Ulrich Kunkel	E3 Engineering & Education for Entertainment GmbH	DIN, NVBF Committee	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	MP
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	MP
Douglas Heriot	Douglas Heriot	Douglas Heriot	O	MP
Gary Dove	Dove Systems	Dove Systems	O	MP
Martin Searancke	Dream Solutions Ltd.	Dream Solutions Ltd.	O	MP
Jerry Durand	Durand Interstellar, Inc.	Durand Interstellar, Inc.	O	CP
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Edward R. Condit	Edward R. Condit	Edward R. Condit	O	G

Name	Company	Representing	Voting Status	Int. Cat.
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	O	CP
Maarten Lepelaars	eldoLED	eldoLED	O	MP
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	MP
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	MP
Hans Leiter	ETC GmbH	Electronic Theatre Controls, Inc.	O	MP
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	MP
Maya Nigrosh	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	MP
Sang-Kyu Lim	ETRI	Electronics and Telecommunications Research Institute	P	G
Tae Gyu Kang	ETRI	Electronics and Telecommunications Research Institute	O	G
Ralph Weber	ENDL Texas	ENDL Texas	O	G
Eric Johnson	Eric Johnson	Eric Johnson	O	G
Erwin Rol	Erwin Rol Software Engineering	Erwin Rol	O	G
Scott M. Blair	Full Throttle Films/ VER	Full Throttle Films/ VER	P	DR
Jeremy Hochman	Full Throttle Films/ VER	Full Throttle Films/ VER	A	DR
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	MP
Victoria Tisdale	Colby College	Google Summer of Code 2013	O	G
Sierk Janszen	Kiss Box	Ground Zero	O	U
Ed Garstkiewicz	Harting Inc., North America	Harting KGAA	P	G
Howard Forryan	Harting Ltd.	Harting KGAA	A	G
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	MP
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	CP
Sean Harding	High Output, Inc.	High Output, Inc.	O	G
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	O	MP
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	CP
Paul J. Clark	HxDx	HxDx	O	CP

Name	Company	Representing	Voting Status	Int. Cat.
Edwin S. Kramer	I.A.T.S.E. Local 1	I.A.T.S.E. Local 1	P	U
John Huntington	City Tech, Ent Tech Department	I.A.T.S.E. Local 1	A	U
Roger Lattin	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	P	U
Dennis Grow	I.A.T.S.E. Local 728	I.A.T.S.E. Local 728	A	U
Alan M. Rowe	IATSE Local 728	I.A.T.S.E. Local 728	A	U
Matthew Ardine	IATSE Local 728	IATSE Local 728	O	U
Phil Klapwyk	IATSE Local 891	IATSE Local 891	O	U
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
John (Javid) D. Butler	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Michael (Mike) Whetstone	Integrated Theatre, Inc.	Integrated Theatre, Inc.	O	CP
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	MP
Hamish Dumbreck	JESE Ltd.	James Embedded Systems Engineering	O	MP
David Timmins	Jands Electronics	Jands Electronics	O	MP
Helge Hoffmann	JB Lighting	JB Lighting	O	MP
Justyn Butler	JBOTS	JBOTS	O	CP
John Musarra	John Musarra	John Musarra	O	U
Josh Gubler	Josh Gubler	Josh Gubler	O	CP
Jason Kyle	JPK Systems Ltd.	JPK Systems Ltd.	O	MP
Ken Vannice	Ken Vannice LLC	Ken Vannice LLC	I	G
Sang-II Choi	Kyungpook National University	Kyungpook National University	O	G
Lauren E. Dunn	Lauren E. Dunn (Larry)	Lauren E. Dunn (Larry)	O	DE
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	MP
Rick Leinen	Leviton Manufacturing Co., Inc.	Leviton Manufacturing Co., Inc.	O	MP
Lars Wernlund	Lewlight	Lewlight	O	MP

Name	Company	Representing	Voting Status	Int. Cat.
Tyrone Mellon_Jr.	Lex Products Corp.	Lex Products Corp.	P	CP
Joshua Liposky	Lex Products Corp.	Lex Products Corp.	A	CP
Klaus Amling	Licht-Technik	Licht-Technik	O	MP
David Yellin	LightMinded Industries, Inc.	LightMinded Industries, Inc.	O	MP
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	MP
Avraham Mendall Mor "Avi"	Lightswitch	Lightswitch	O	U
Simon Alpert	Lighttech Event Technologies	Lighttech Event Technologies	O	CP
Gary Pritchard	LSC Lighting Systems (Aust) PTY Ltd	LSC Lighting Systems PTY Ltd	O	MP
Ken Bruns	Lumenpulse Lighting Inc.	Lumenpulse Lighting Inc.	O	MP
Michael Karlsson	LumenRadio AB	LumenRadio AB	P	MP
Marcus Bengtsson	LumenRadio AB	LumenRadio AB	A	MP
Hans Lau	LumenRadio AB	LumenRadio AB	A	MP
Peter Kirkup	LumenRadio AB	LumenRadio AB	A	MP
Bart Swinnen	Luminex LCE	Luminex LCE	O	MP
Jim Holladay	Luxence	Luxence	O	G
Dan T. Nguyen	LynTec	LynTec	O	MP
C. S. Wong	Macostar International Ltd.	Macostar International Ltd.	O	CP
Yongshun Duan	Macostar Physics Application Technology Development (Wuhan) Ltd.	Macostar International Ltd.	O	CP
Torben Kaas Rasmussen	Martin Professional A/S	Martin Professional A/S	O	G
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	MP
Simon Newton	Open Lighting Project	Open Lighting Project	P	G
Sean Sill	Open Lighting Project	Open Lighting Project	O	DE
Stuart Cotts	Oregon Shakespeare Festival	Oregon Shakespeare Festival	O	U
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	CP
Gordan Rancic	Phoenix Service srl	Phoenix Service srl	O	MP

Name	Company	Representing	Voting Status	Int. Cat.
Samuli Valo	Picturall Ltd.	Picturall Ltd.	O	MP
Ben Peoples	Pittsburgh Hoist & Sandbag Company	Pittsburgh Hoist & Sandbag Company	O	CP
Ron Bonner	PLASA Technical Resources Office	PLASA EU	O	G
James Eade	PLASA	PLASA EU	O	G
Erin Grabe	PLASA NA	PLASA NA	exf	G
Karl G. Ruling	PLASA NA	PLASA NA	exf	G
Charles Reese	Production Resource Group	Production Resource Group	P	DR
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	O	MP
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	O	MP
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	MP
Andrew Eales	Wellington Institute of Technology	Rhodes University	O	U
Nyasha Chigwamba	Dept. of Computer Science	Rhodes University	O	U
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	CP
Rob Halliday	Rob Halliday	Rob Halliday	O	U
Martin Farnik	Robe Show Lighting s.r.o.	Robe Show Lighting s.r.o.	O	MP
Robert Tooker	Robert Tooker	Robert Tooker	O	U
Michael Lay	Philips Color Kinetics	Royal Philips	P	MP
John Warwick	Philips Color Kinetics	Royal Philips	O	MP
Ralph Stillinger	Strand Lighting	Royal Philips	O	MP
Robert Timmerman	Philips Color Kinetics	Royal Philips	O	MP
Jeremy Day	Philips Color Kinetics	Royal Philips	O	MP
Yngve Sandboe	Sand Network Systems, Inc.	Sand Network Systems, Inc.	O	MP
Kimberly Corbett Oates	Schuler Shook	Schuler Shook	P	DE
Lars F. Paape	Scientific Algorithms and Embedded Systems	Scientific Algorithms and Embedded Systems	O	U
Mick Martin	ShowCAD Control Systems	ShowCAD Control Systems	O	MP

Name	Company	Representing	Voting Status	Int. Cat.
Loren Wilton	Showman Systems	Showman Systems	O	CP
Mark Manthei	Shure Inc.	Shure Inc.	O	G
Kehang Wu	Shure Inc.	Shure Inc.	O	G
Jon R. Farley	Sixteenth Avenue Systems	Sixteenth Avenue Systems	O	CP
Robert Barbagallo	Solotech Inc.	Solotech Inc.	O	U
Eckart Steffens	Soundlight, the DMX Company	Soundlight, the DMX Company	P	CP
Paul K. Ericson	Sparling	Sparling & IES	O	DE
Storm K. Staley	Stormwerx	Stormwerx	O	U
Stephen Bickford	T. Kondos Associates	T. Kondos Associates	O	U
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Klas Dalbjorn	Labgruppen AB	TC Group	O	MP
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Colin Waters	TMB	TMB	O	DR
Mitch Hefter	Mitch Hefter	USITT	P	U
Torrey Bievenour	Vision Quest Lighting	Vision Quest Lighting	O	G
Jeff T. Miller	Worldwide Standards and Auditing	Walt Disney Company	O	U
Paul Beasley	Walt Disney Imagineering	Walt Disney Company	O	U
Eric Cornwell	West Side Systems	West Side Systems	O	U
Christopher Tilton	Westlake Reed Leskosky	Westlake Reed Leskosky	O	DE
BenDarrington	Wireless Solutions Sweden AB	Wireless Solutions Sweden AB	O	MP
Larry Zoll	Zoll Design & Consulting, LLC	Zoll Design & Consulting, LLC	O	U

#### Voting Status and Interest Category Legend

<b>P</b> principal voting member	<b>CP</b> custom-market producer
<b>A</b> alternate voting member	<b>MP</b> mass-market producer

<b>I</b> individual voting member	<b>DE</b> designer
<b>O</b> observer non-voting member	<b>DR</b> dealer/rental company
	<b>U</b> user
	<b>G</b> general interest